

Allergists take several steps to pinpoint the source of allergy symptoms. In addition to conducting tests during which skin is pricked or blood is drawn, allergists also conduct a detailed medical history when screening an individual for food allergy.

Skin-prick tests involve using extract from the suspected allergenic food in a device that dispenses a tiny amount during the prick. The blood-draw test involves measuring the amount of antibodies in the blood sample that recognize allergenic protein fragments called “epitopes.” When an antibody called “immunoglobulin E” (IgE) binds to epitopes, the food is recognized as foreign by the immune system, and an allergic reaction occurs.

In the case of peanuts, commercial skin-prick allergy tests use extracts prepared from raw peanuts. However, Agricultural Research Service researchers in New Orleans, Louisiana, have found that roasted peanuts bind higher levels of IgE than raw peanuts.

## Casting a Wider Net To Detect Peanut Allergy

At the unit, ARS chemist Soheila Maleki led a team that prepared individual extracts from raw, roasted, or boiled peanut samples. The scientists also procured three commercial extracts derived from raw peanuts under unknown methods. The team included colleagues from Louisiana State University in Shreveport.

Each of the 6 extracts was used in skin-prick tests on 19 study volunteers who had shown symptoms of peanut allergy and 4 volunteers who could eat peanuts without any symptoms.

Each of the individually prepared laboratory extracts—raw, roasted, or boiled—led to both false positives and false negatives. False positives occurred in nonallergic

patients, and false negatives occurred in allergic patients.

“None of the three custom-made extracts tested individually showed optimal diagnostic reliability in terms of patient sensitivity and specificity,” says Maleki. At least three of the volunteers with a history of severe reaction to peanuts had a variety of reactions (including one false negative) to one or more of the three commercial extracts tested.

Maleki and colleagues suggest that future testing include a mix of extracts from raw, boiled, and roasted peanuts to enhance diagnostic capability.

The study was published in *Annals of Allergy, Asthma, and Immunology* in December 2010.—By **Rosalie Marion Bliss**, ARS.

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## Assessing the U.S. Population's Sodium Intake

Sodium intake has become a hot topic as public policymakers address regulatory proposals aimed at lowering the amounts in foods. In 2010, the Institute of Medicine issued a report recommending that new national sodium standards be implemented by the federal government. Several major food manufacturers have long been implementing sodium-reduction strategies through self-regulation.

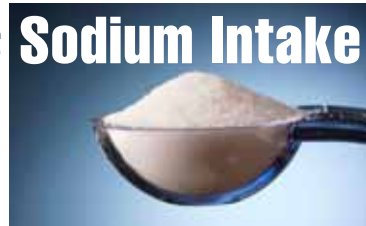
The usefulness of proposed regulatory steps will depend on accurate and practical methods to monitor the U.S. population's sodium intake. In the late 1990s, researchers at the Agricultural Research Service's Beltsville Human Nutrition Research Center developed the Automated Multiple Pass Method (AMPM), an innovative surveying tool used to obtain information on the amounts of foods and beverages consumed by a survey volunteer during a 24-hour period.

The researchers also conducted a study to evaluate the accuracy of the method, us-

ing each volunteer's 24-hour urinary excretion to measure biomarkers of nutrient status. That study, involving 524 male and female volunteers aged 30 to 69 years, confirmed the accuracy of this innovation in food-consumption survey methods.

Now, Donna Rhodes, a nutritionist with the Beltsville center, has used this data to assess sodium intakes. The accuracy of sodium intake was calculated as the ratio of reported dietary intake to that estimated from the urinary sodium excretion. Estimates of sodium intake included salt added in cooking but not salt added at the table.

The results showed that the AMPM-derived dietary sodium-intake estimates (based on volunteers' reported food consumption) were 93 percent accurate among men and 90 percent accurate among women when cross-checked against the urinary sodium-excretion data.



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An ARS food-survey tool proves accurate in estimating the amount of sodium consumed by volunteers.

Results from this study are significant because they demonstrate that the AMPM is a valid tool for

estimating sodium intake as well as energy intake. The current USDA-ARS national food and nutrient intake survey uses the automated tool for both in-person and telephone interviews.

“The automated tool will continue to accurately estimate the population's sodium intakes from foods as food-composition databases produced by ARS are routinely updated to reflect changes in the salt content of foods consumed,” says Rhodes.

The study was accepted for publication by the *American Journal of Clinical Nutrition*.—By **Rosalie Marion Bliss**, ARS.

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